What is claimed is:

1. A chemical mechanical polisher for planarizing a film on one side of a substrate having two sides comprising at least one light source that transmits light through the substrate from the side of the substrate without the film to at least one section on the film, thereby creating at least one reflected light signal that is received by at least one means for monitoring thickness change based on the reflected light signal.

2. The polisher as claimed in claim 1 wherein said at least one means for monitoring thickness change based on the reflected light signal comprises a photodetector connected to an interferometer or a spectrophotometer.

3. The polisher as claimed in claim 1 wherein each monitored section is minimized in size to remove signal problems.

4. The polisher as claimed in claim 1, wherein only one section is illuminated which is a dedicated measurement area.

5. The polisher as claimed in claim 1, wherein more than one section is illuminated.

6. A chemical mechanical polisher for planarizing a film on one side of a substrate having two sides comprising at least one

light source that transmits light through the substrate from the side of the substrate without the film to at least one section on the film creating at least one reflected light signal that is received by at least one device that monitors a dimensional change based on the reflected light signal.

7. The polisher as claimed in claim 6 wherein the at least one device is positioned on the same side of the substrate as the light source.

8. The polisher as claimed in claim 6 wherein each monitored section is minimized in size to remove signal problems.

9. The polisher as claimed in claim 6, wherein only one section is illuminated which is a dedicated measurement area.

10. The polisher as claimed in claim 6, wherein more than one section is illuminated.

11. A chemical mechanical polisher for planarizing a film on one side of a substrate having two sides comprising at least one light source that transmits light through the substrate from the side of the substrate with the film to at least one section on the film creating at least one reflected light signal that is received by at least one device that monitors a dimensional change based on the reflected light signal.

12. The polisher as claimed in claim 11 wherein the at least one device is positioned on the same side of the substrate as the light source.

13. The polisher as claimed in claim 11 wherein each monitored section is minimized in size to remove signal problems.

14. The polisher as claimed in claim 11, wherein only one section is illuminated which is a dedicated measurement area.

15. The polisher as claimed in claim 11, wherein more than one section is illuminated.

16. A chemical mechanical polisher for planarizing a film on one side of a substrate having two sides comprising at least one light source that transmits light through the substrate from the side of the substrate with the film to at least one section on the film creating at least one reflected light signal that is received by at least one means for monitoring thickness change based on the reflected light signal.

17. The polisher as claimed in claim 16 wherein the at least one means for monitoring thickness change based on the reflected light signal comprises a photodetector connected to an interferometer or spectrophotometer.

18. The polisher as claimed in claim 16 wherein each monitored section is minimized in size to remove signal problems.

19. The polisher as claimed in claim 16, wherein only one section is illuminated which is a dedicated measurement area.

20. An in-situ chemical-mechanical polishing process monitor apparatus for monitoring a polishing process during polishing of a workpiece in a polishing machine, the polishing machine having a rotatable polishing table provided with a polishing slurry, said apparatus comprising:

a) a window embedded within the polishing table, said window traversing a viewing path during polishing and further enabling in-situ viewing of a polishing surface of the workpiece from an underside of the polishing table during polishing as said window traverses a detection region along the viewing path; and

b) means coupled to said window on the underside of the polishing table for measuring a reflectance, said reflectance measurement means providing a reflectance signal representative of an in-situ reflectance, wherein a prescribed change in the in-situ reflectance corresponds to a prescribed

condition of the polishing process.

21. The apparatus of claim 20, wherein:
said window further being embedded within the table wherein a top surface of said window is substantially flush with a top surface of the table.

22. The apparatus of claim 20, further comprising:
c) means responsive to reflectance signal for detecting the prescribed change in the in-situ reflectance in real-time, said detection means providing an output signal indicative of the detection of the prescribed change in the in-situ reflectance.

23. The apparatus of claim 22, wherein:
said window further being embedded within the table wherein a top surface of said window is substantially flush with a top surface of the table.

24. A polishing machine having in-situ polishing process monitor control of a polishing process during polishing of a workpiece on a rotatable polishing table provided with a polishing slurry, said polishing machine comprising:

a) a window embedded within the polishing table, said window traversing a viewing path during polishing and further enabling in-situ viewing of a polishing surface of the workpiece from an underside of the polishing

table during polishing as said window traverses a detection region along the viewing path;

b) means coupled to said window on the underside of the polishing table for measuring a reflectance, said reflectance measurement means providing a reflectance signal representative of an in-situ reflectance, wherein a prescribed change in the in-situ reflectance corresponds to a prescribed condition of the polishing process.

25. The polishing machine of claim 24, wherein:
said window further being embedded within the table wherein a top surface of said window is substantially flush with a top surface of the table.

26. The polishing machine of claim 24, further comprising:
c) means responsive to the reflectance signal for detecting the prescribed change in the in-situ reflectance in real-time, said detection means providing an output signal representative of the detection of the prescribed change in the in-situ reflectance.

27. The polishing machine of claim 26, further wherein:
said window further being embedded within the table wherein a top surface of said window is substantially flush with a top surface of the table.

28. The polishing machine of claim 26, further wherein: said detection means further comprises means responsive to the output signal for controlling the polishing process.

29. The polishing machine of claim 28, still further wherein:

said window further being embedded within the table wherein a top surface of said window is substantially flush with a top surface of the table.

30. The polishing machine of claim 28, still further wherein:

said detection means detects a polishing endpoint corresponding to the prescribed change in the in-situ reflectance, and further wherein said detection means controls the polishing process for terminating the polishing of the workpiece in response to the detection of the polishing endpoint.

31. The polishing machine of claim 28, still further wherein:

said detection means detects a polishing non-uniformity corresponding to the prescribed change in the in-situ reflectance, and further wherein said detection means controls the polishing process for terminating the polishing of the workpiece in response to the detection of the polishing non-uniformity.